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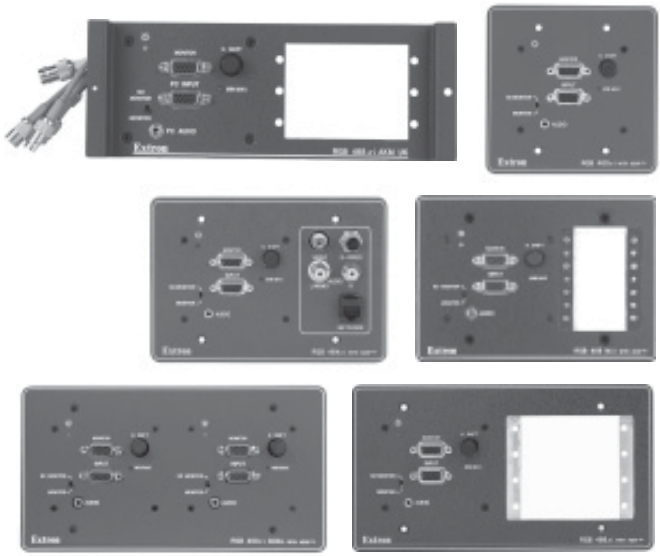
Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual



RGB 460xi , 460xi Dual, 464xi , 468xi , and 468 Mxi

Wall and Floor box Mountable Interfaces with Euro Channel and AKM UK versions

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Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterias usadas siguiendo las instrucciones del fabricante.

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1 Chapter One

Introduction

About this Manual

About the RGB 460xi Series

Features

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About this Manual

This manual describes the Extron RGB 460xi series of universal wall, furniture, and floor box mountable interfaces and explains how to configure and operate them. Unless otherwise noted, the term "RGB 460xi" or "interface" is used throughout this manual to refer collectively to all models in the RGB 460xi Series.

Detailed mounting instructions are available in other Extron documentation:

- For wall box installations, refer to one of the available wall box installation guides.
- For wall or furniture mount installations with Euro Channel versions, refer to #68-636-03.
- For Steel City® floor box installations, refer to #68-636-04.
- For MK box installations, refer to #68-636-02.
- For FSR floor box installations, refer to #68-636-05.
- For AKM UK floor box installations, refer to #68-904-01.

About the RGB 460xi Series

The Extron RGB 460xi (all), RGB 460xi Dual, RGB 464xi, RGB 468xi, RGB 468 Mxi, and RGB 468xi AKM UK are compact computer video interfaces. Each interface comes in either a two-gang (RGB 460xi), three-gang (RGB 464xi and RGB 468 Mxi), or four-gang (RGB 460xi Dual and RGB 468xi) wall box size, except Steel City, MK, FSR, and AKM UK floor box models. Optionally, the two-gang and four-gang interfaces (except for the RGB 460xi Dual, MK, FSR, and AKM UK models) come in an EC version which mounts in a Euro Channel. The interfaces (except for the RGB 460xi Dual, MK, FSR, and AKM UK models) are also wall/furniture mountable and come with a matching mud ring kit (part #70-086-xx). The interfaces have a 300 MHz (-3dB) video bandwidth.

Each interface accepts one computer video input (15-pin HD) and one stereo audio input, and all models include a 15-pin HD buffered local monitor output.

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Features

Horizontal shifting control — The displayed image may be shifted to the left or right by turning a front panel knob.

Advanced Digital Sync Processing™ (ADSP™) — ADSP allows sync processing operations, such as horizontal centering, to occur without affecting the signal's sync timing. This allows horizontal centering to be applied to signals that are output to digital display devices such as LCD projectors, DLP projectors and plasma displays. An internal DIP switch provides another option, Digital Display Sync Processing™ (DDSP™), to ensure proper displays without altering sync pulse timing or width.

Stereo audio — Unbalanced stereo audio inputs can be output as balanced or unbalanced unamplified stereo audio.

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2

Chapter Two

Installation and Operation

Installation Overview

Front Panel Features and Cabling

Rear Panel Features and Cabling

Euro Channel and Floor Box Versions

Adapter Plate (AAP/MAAP) Mounting

Pre-installation Testing

Interface Mounting

Application Examples

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Installation Overview

CAUTION *Installation and service should be performed by authorized personnel only. UL Listed electrical boxes are recommended. See "UL requirements" in this chapter.*

To install and set up an RGB 460xi Series interface, follow these steps:

1. Turn off all equipment. Disconnect the computer, the interface, and the output devices (e.g., projector/monitor, speakers, etc.) from the power source.
2. If applicable, prepare the site as explained in the appropriate installation guide.
3. Attach any optional architectural adapter plates (AAPs) to the interface (RGB 468xi, RGB 468 Mxi, or RGB 468xi AKM UK only) and then attach all the cables. See "Front Panel Features and Cabling," "Rear Panel Features and Cabling," and "Mounting Adapter Plates (AAPs/MAAPs)" in this chapter.
4. Set rear panel DIP switches as explained in the "Rear Panel Features and Cabling" section of this chapter.
5. Connect all output device, interface, and computer power cords and then turn on all devices. All devices should have power, and the audio and video should be working properly. If not, check all cabling and switch settings, and make adjustments as necessary.
6. Disconnect power from all the devices.
7. Mount the interface as explained in the appropriate installation guide.
8. Restore power to the devices.

UL requirements

To comply with Underwriters Laboratories (UL) safety requirements, the following minimum guidelines must be followed:

- The interface must not be used beyond its rated voltage range.
- The interface must be installed in UL Listed junction box.
- The interface must be installed with conduit in accordance with the National Electrical Code.

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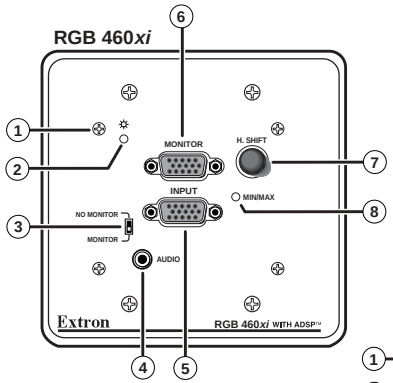
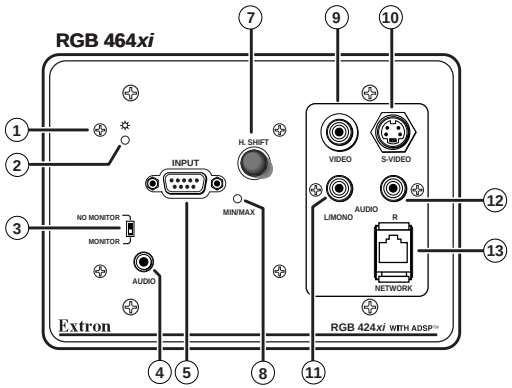
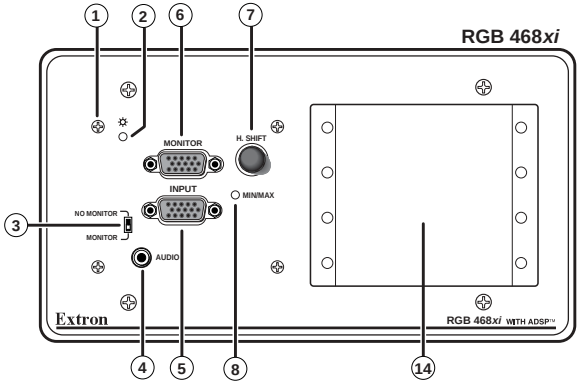
Front Panel Features and Cabling

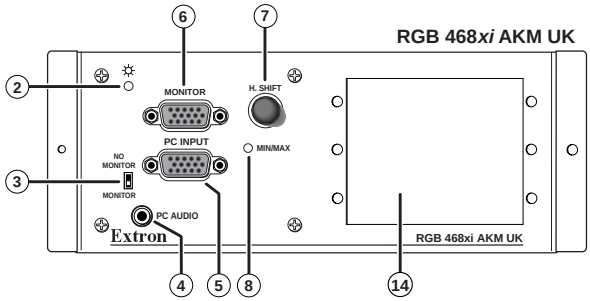


NOTE *The RGB 460xi Dual (not pictured) consists of two RGBxi interfaces placed side-by-side on a 4-gang faceplate.*





NOTE *The RGB 468 Mxi (not pictured) is functionally identical to the RGB 468xi (at left) except that it fits in a 3-gang box and accepts four mini-AAPs (MAAPs).*



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(1) **Faceplate screws** — These screws secure the faceplate to the rest of the interface.

CAUTION *Do not remove these faceplate screws while the interface is attached to the wall or the detached interface may fall down inside the wall.*

(2) **Power/signal LED** — This LED lights

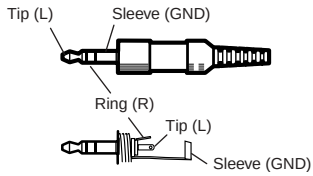
- Yellow to indicate that the interface is receiving power.
- Green to indicate that an active sync signal is present at the input and the interface is receiving power.

NOTE *If the input signal has sync on green, the LED will not change from yellow to green*

(3) **No Monitor/Monitor switch** (video input termination) — Select one of the following video input impedance selections to provide the best picture:

- No Monitor (75 ohms) if no local monitor is connected or if the picture is too bright or blooming (unterminated).
- Monitor (high impedance) if a local monitor is connected, a laptop breakout cable is used, or if the picture is too dark.

(4) **Audio input connector** — Plug a 3.5 mm stereo plug into this jack for unbalanced audio input. Wire the male plug as shown on the right.



(5) **Computer input connector** — Attach a cable from the computer to the interface via this female 15-pin HD connector.

(6) **Buffered local monitor output connector** — Attach a cable from a local monitor to this female 15-pin HD connector.

(7) **Horizontal shift control knob (H. Shift)** — While viewing the displayed image, rotate this control to move the image to the right or left on the screen. The Min/Max LED ((8)) will flash red whenever the minimum or maximum limit of this control is reached.

NOTE *DDSP disables the horizontal shifting control.*

(8) **Min/Max LED** — This LED blinks red momentarily whenever the minimum or maximum limits of the horizontal shift control ((7)) have been reached. Continually turning the horizontal shift control knob in the same direction after the limit has been reached will cause the LED to continually blink.

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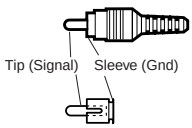
(9) **Composite video connector (RGB 464*xi*)** — This female RCA-to-BNC type connector provides pass-through capability for composite video input.

(10) **S-video pass-through connector (RGB 464*xi*)** — Connect an S-video source to this 4-pin mini DIN pass-through connector.

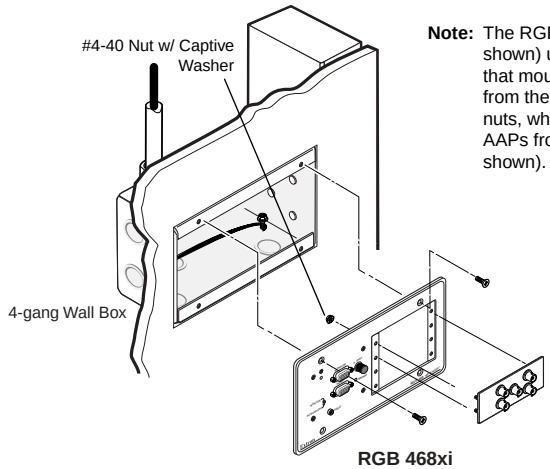
(11)(12) **RCA audio connectors (RGB 464*xi*)** — Connect the left audio signal cable to the white RCA connector (L/Mono), and the right audio signal cable to the red RCA connector (R) for unbalanced stereo audio pass-through input. Wire the RCA plugs as shown on the right.



NOTE *When a mono audio signal is applied to the L/Mono input, the same signal will be output to both left and right audio outputs.*

(13) **Network connector (RGB 464*xi*)** — Connect a computer to this RJ-45 female connector for pass-through to a network.

(14) **Opening for architectural adapter plates** — The RGB 468xi can accept up to four optional standard architectural adapter plates (AAPs) attached here (up to three on the RGB 468xi AKM UK). The RGB 468 Mxi (not pictured) can accept up to four optional mini architectural adapter plates (MAAPs) attached here. The adapter plates come in a variety of audio/video connector configurations.



Note: The RGB 468 Mxi (not shown) uses hex screws that mount the MAAPs from the front, instead of nuts, which mount the AAPs from the rear (as shown).

RGB 468xi

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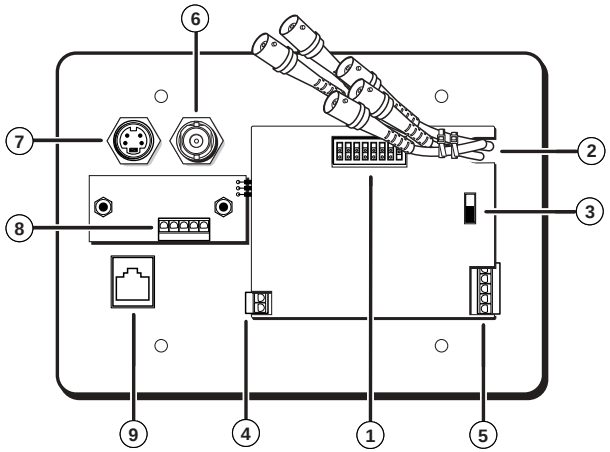
Blank plates (two single space and one double space) are included with the interfaces to cover unused spaces. Adapter plates must be ordered separately (see "Adapter Plates" in appendix A). They must also be attached to the faceplate and cabled before the interface is installed in the wall or furniture. The screws needed for installing the adapter plates are supplied (MAAPs), or built into the plates (AAPs), so no additional screws are needed.

1. Remove the blank plates from the interface by unscrewing the hex screws (MAAPs) or nuts (AAPs) that fasten the plates to the faceplate.
2. Attach the adapter plates to the faceplate with the provided hex screws (MAAPs) or captive washers and #4-40 nuts (AAPs).
3. Attach the output cables to the rear connectors of the adapter plates. Soldering will be required for some connectors. Attach foil and braided shields to ground connections.

Rear Panel Features and Cabling



Rear panel of the RGB 464xi interface

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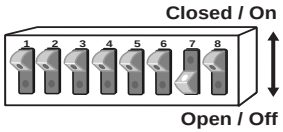
(1) **DIP switches** — This bank of DIP switches, as illustrated below, controls sync on green output, composite sync output, DDSP (Digital Display Sync Processing), serration pulse output, vertical sync pulse width, and composite sync routing. Moving a switch up will set it to "On" and moving it down will set it to "Off".



NOTE *The default for all DIP switches, except for switch 7, is Off (down).*

1 — Sync on green

Off — The interface outputs separate horizontal and vertical sync (on the H and V connectors) for RGBHV.

On — The interface outputs sync on green (RGsB).

2 — Composite sync — This switch controls composite sync output.

Off — The interface outputs RGBHV or RGsB video.

On — The interface outputs combined horizontal and vertical sync for RGBS.

3 — DDSP (Digital Display Sync Processing) — This feature may be necessary for digital display devices such as LCD, DLP (digital light processing), and plasma displays. Use this option if the image is not displayed properly after other options, such as serration pulse and vertical sync pulse width, have been explored.

Off — The interface performs sync processing operations, such as centering, with ADSP.

On — The interface uses DDSP instead of ADSP. DDSP does not process the sync signal.

NOTE *DDSP disables the horizontal shifting control.*

4 — Serration pulse — Many LCD and DLP projectors and plasma displays must have serration pulses removed from the sync signal in order to display the image properly. Flagging or bending at the top of the video image is a sign that the serration pulses should be removed.

Off — The interface does not output serration pulses.

On — The interface outputs serration pulses in the vertical sync interval.

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5 — Vertical sync pulse width — Try adjusting the output vertical sync pulse width if no picture appears, the picture cuts in and out, or the picture is scrambled.

Off — The vertical sync pulse is wide.

On — The vertical sync pulse is narrow.

NOTE *You can also try switching from ADSP to DDSP, as explained in the description for DIP switch 3 on the previous page.*

6 — Negative sync — This switch controls sync polarity.

Off — Output sync polarity follows (is the same as) input polarity.

On — Both the horizontal and the vertical sync signals are forced to negative polarity on output.

7 & 8 — Composite sync routing — These switches work together to route local monitor signals for Macintosh 13" monitors and all other Macintosh and VGA-type monitors.

NOTE *To be valid, these switches must be set so that one is Off and the other is On. If both are set to On or Off, composite sync routing will not function.*

7 (On), 8 (Off) — Sync routing to 15-pin HD local monitor for all Macintosh (non-13") and VGA monitors (default).

7 (Off), 8 (On) — Sync routing to 15-pin HD local monitor for a Macintosh 13" monitor.

(2) **RGB video output connectors** — Attach coaxial cables from the interface to the display device via these female BNC connectors. These BNCs are on red, green, blue, black, and yellow pigtail wires secured to the interface by the tie wraps.

For **RGBHV** output: **R** is red, **G** is green, **B** is blue, **H** is black, and **V** is yellow.

For **RGBS** output: **R** is red, **G** is green, **B** is blue, and **S** is black.

For **RGsB** output: **R** is red, **G** is green, and **B** is blue.

(3) **Gain switch** — To compensate for cable resistance and capacitance, slide this switch to select the level of video gain that yields the sharpest picture:

Normal (bottom position) — unity gain (no signal boost).

Medium (middle position) — mid-level peaking and gain.

Maximum (top position) — maximum amount of peaking and gain. (Select this for use with longer cables.)

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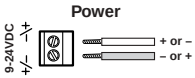
NOTE *If the signal cable between the interface and the output device is shorter than approximately 125 feet, and the gain switch is set to Medium or Maximum, the image may be overcompensated. If the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, try changing the gain/peaking setting. The gain switch will be inaccessible after installation, so adjust the gain before installing the interface into a wall or furniture.*

④ **Power connector** — Connect a 9VDC to 24VDC power supply to this 3.5 mm, 2-pole, direct insertion captive screw connector. Wire the connector as shown here. Polarity is not important.



⑤ **Audio output connector** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole, direct insertion captive screw connector for unbalanced or balanced audio output. Wire the connector as shown here.

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

⑥ **Composite video pass-through BNC connector** — A male BNC connector attaches here.

⑦ **S-video pass-through 4-pin mini DIN connector** — A male 4-pin mini DIN connector attaches here.

⑧ **Balanced active audio connector** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole, direct insertion captive screw connector for balanced active audio output. Wire the connector as shown above.

⑨ **Network pass-through RJ-45 connector** — If this connector is not required, a blank cover is supplied to fill this faceplate opening.

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Euro Channel and Floor Box Versions

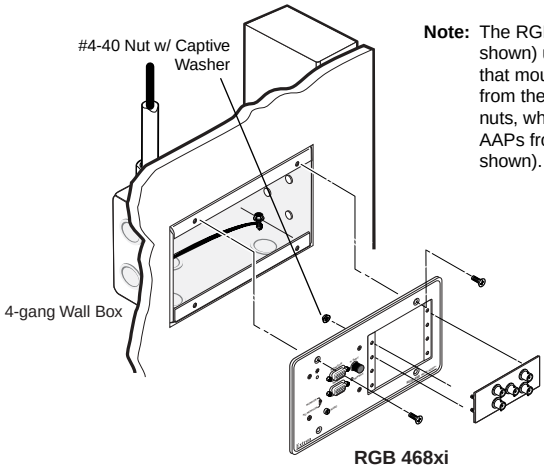
The RGB 460xi and RGB 468xi are available in a Euro Channel (EC) version, the RGB 460xi is available in two floor box models (MK and FSR), and the RGB 468xi AKM UK is designed for Ackermann floor boxes. (See appendix A for part numbers.)

The front and rear panel features, cabling requirements, and testing/troubleshooting procedures are identical to the descriptions shown in this chapter for the wall box models. For installation instructions, see the RGB 400xi Series installation guide that addresses your specific requirements.

Mounting Adapter Plates (AAPs/MAAPs)

All AAPs/MAAPs should be mounted before the interface is tested or installed in a wall or furniture. Each AAP/MAAP has standoffs (screws built into the rear panel) and nuts/hex screws, which can be used to secure the AAP/MAAP to the interface.

1. Insert the AAP/MAAP standoffs into screw holes in the interface.
2. Using the #4-40 nuts (standard AAPs) or the 3/32" hex screws (MAAPs) provided, secure the AAP/MAAP to the interface.



Note: The RGB 468 Mxi (not shown) uses hex screws that mount the MAAPs from the front, instead of nuts, which mount the AAPs from the rear (as shown).

Mounting an adapter plate (AAP shown)

3. Repeat steps 1 and 2 to mount other AAPs/MAAPs. Cover any openings in the interface with blank AAP/MAAP plates.

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4. Be sure to include the AAP/MAAP connectors as part of the installation pretest before final installation of the interface.

   For more information about interface installation, refer to the appropriate installation guide.

Pre-installation Testing

Before installing the interface into the wall, furniture, or floor box, test the system as follows to verify that the connections and settings are correct.

1. Apply power to the interface. The power/signal LED on the interface should light to indicate that the interface is receiving power.
2. Check all connectors and controls to make sure they are functioning properly.

Troubleshooting

If the power/signal LED does not light or an installation component does not function properly, first check the wiring at both the interface and the power supply, and then ensure that the power supply is connected to a power source.

If the image does not appear or there is no sound

1. Make sure that all the devices are powered on.

2. Ensure that the connectors are wired correctly at both ends of the cables. Audio cables must be wired for an unbalanced stereo input signal and for a balanced or an unbalanced stereo output signal.

3. If input is from a laptop computer and no picture appears, use a laptop breakout cable for the input connection. Check the computer's user's guide or contact Extron to determine if special commands are required to output video to the external video port. Also, many laptops' screens shut off after the external video port is activated.

4. Call the Extron S³ Sales and Technical Support Hotline if the image still does not appear or there is no sound.

If the image is not displayed correctly

1. If the picture is too bright or dark, or if the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, change the gain setting.

2. If the picture appears and is stable, but it has ghosting or blooming, verify that the video input is properly

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terminated. If the problem is not resolved by changing the termination, try using a different input cable. Poor quality or damaged cable can cause ghosting or blooming.

3. If the picture still is not displayed correctly, call the Extron S³ Sales and Technical Support Hotline.

If the interface does not respond to horizontal shifting

If the picture does not move on screen when the horizontal shift control knob is rotated, DDSP is in use. Set the DDSP DIP switch to Off.

Interface Mounting

Once the system has been cabled and tested, the interface can be installed in the wall, furniture, or floor box. To mount the interface, refer to the installation guide that addresses your specific requirements.

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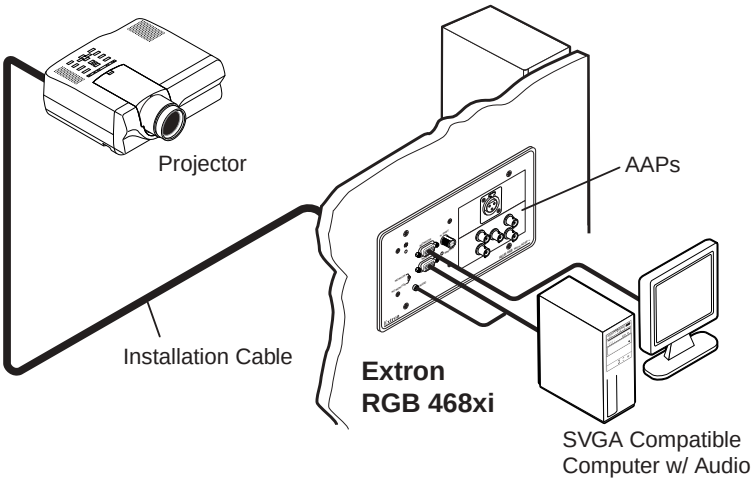
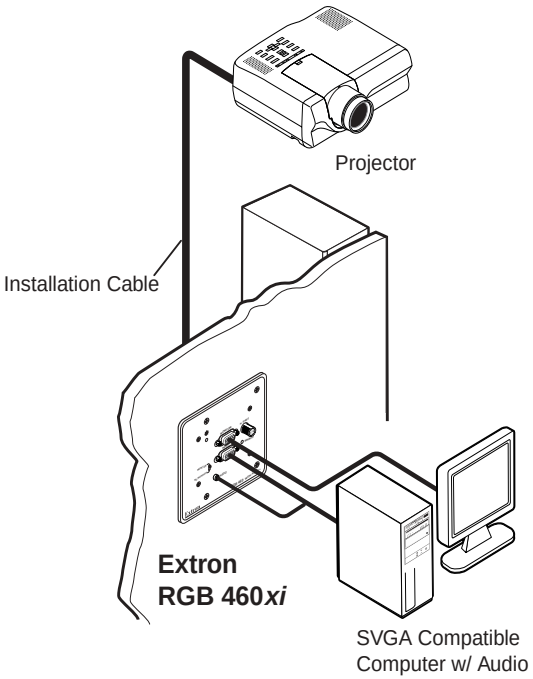
Application Examples





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Appendix A

Specifications, Part Numbers, and Accessories

Specifications

Ordering Information

AAP/MAAP Availability

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Specifications

Video

Gain	Unity (0.7V), 15% with 3dB peaking (0.8V), 30% with 6dB peaking (0.9V)
Bandwidth	300 MHz (-3dB)

Video input and loop through

Number/signal type	
RGB 460*xi* Dual	2 analog RGBHV, RGBS, RGsB
All other models	1 analog RGBHV, RGBS, RGsB
Connectors	
RGB 460xi /460xi EC/460xi FSR/464xi/468xi/468 Mxi/468xi EC/ 468xi AKM UK	(1) 15-pin HD female buffered input connector and (1) 15-pin HD female local monitor loop through connector
RGB 460*xi* Dual	(2) 15-pin HD female buffered input connectors and (2) 15-pin HD female local monitor loop through connectors
Nominal level	0.7V p-p for RGB
Minimum/maximum levels	Analog: 0.3V to 1.45V p-p with no offset at unity gain
Impedance	75 ohms or Hi Z, switchable (set to 75 ohms if no local monitor is connected)
Horizontal frequency	15 kHz to 150 kHz (optimum 15 kHz to 62 kHz)
Vertical frequency	30 Hz to 170 Hz
Return loss	<-30dB @ 5 MHz

Video output

Number/signal type	
RGB 460xi Dual	2 separate analog RGBHV, RGBS, RGsB
All other models	1 analog RGBHV, RGBS, RGsB
Connectors	
RGB 460xi Dual	2 x 5 BNC female on 2" to 2.5" cables
All other models	5 BNC female on 2" to 2.5" cables
Nominal level	0.7V p-p for RGB
Minimum/maximum levels	Analog: 0.7V to 0.9V p-p (switch selectable) w/ peaking and 0.7V p-p input
Impedance	75 ohms
Return loss	<-30dB @ 5 MHz

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Sync

Input type	Autodetect RGBHV, RGBS, RGsB (accepts RGsB but does not strip from video)
Output type	RGBHV (at all times)
	RGBS ..... switch selectable
	RGsB ..... switch selectable or pass-through
Input level	2.0V to 5.5V p-p with ±0.2VDC offset max.
Output level	4.0V to 5.0V p-p
Input impedance	510 ohms
Output impedance	75 ohms
Max propagation delay	52 ns
Max rise/fall time	2.5 ns
Polarity	Positive or negative

Audio — all models

Gain	Unbalanced output: 0dB, balanced output: +6dB
Response	20 Hz to 20 kHz, ±0.5dB
THD + Noise	0.03% @1 kHz, 0.3% @ 20 kHz at nominal level
S/N	>90dB at rated maximum output (14dBu), balanced
Stereo channel separation	>90dB @ 1 kHz to 20 kHz

Audio input — RGB 464xi

Number/signal type	2 stereo, unbalanced, 20 Hz to 20 kHz
Connectors	Ch. 1 ..... 3.5 mm stereo female jack (2 channel), unbalanced; tip (L), ring (R), sleeve (ground)
	Ch. 2 ..... 2 RCA female jacks
Impedance	>5 kohms unbalanced, DC coupled
Nominal level	-10dBV (316mV)
Maximum level	+8.5dBu (unbalanced) at 1%THD+N

Audio input — all other models

Number/signal type	
RGB 460xi Dual	2 separate, stereo, unbalanced, 20 Hz to 20 kHz
All other models	1 stereo, unbalanced, 20 Hz to 20 kHz
Connectors	
RGB 460xi Dual	(2) 3.5 mm stereo female jacks (2 channel), unbalanced; tip (L), ring (R), sleeve (ground)
All other models	3.5 mm stereo female jack (2 channel), unbalanced; tip (L), ring (R), sleeve (ground)
Impedance	>5 kohms unbalanced, DC coupled
Nominal level	-10dBV (316mV)
Maximum level	+8.5dBu (unbalanced) at 1%THD+N

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Audio output — RGB 464xi

Number/signal type	2 buffered, stereo (2 channel), balanced/unbalanced
Connectors	3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel
Maximum level (600 ohm)	+14dBm, balanced at stated %THD+N

Audio output — all other models

Number/signal type	
RGB 460xi Dual	2 separate, buffered, stereo (2 channel), balanced/unbalanced
All other models	1 buffered, stereo (2 channel), balanced/unbalanced
Connectors	3.5 mm captive screw connector, 5 pole
Impedance	50 ohms, unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel
Maximum level (600 ohm)	+14dBm, balanced at stated %THD+N

NOTE *0dBu = 0.775 volts (RMS).*

General

Power	100VAC to 240VAC, 50/60 Hz, 5 watts, external, auto-switchable; to a 9 to 24VDC, 0.20 A power supply. The product requires 0.2 A (minimum). A 12VDC, 1 A power supply is included.
Temperature/humidity	Storage -40° to +158°F (-40° to +70°C)/10% to 90%, noncondensing Operating +32° to +122°F (0° to +50°C)/10% to 90%, noncondensing
Rack mount	No
RGB 460/464/468xi SC	Steel City AFM floor box mountable
RGB 460xi MK	MK box mountable
RGB 460xi FSR	FSR box mountable
RGB 468xi AKM UK	Ackermann floor box mountable
All other models	Wall or furniture mountable
Enclosure type	Metal
Enclosure dimensions	
RGB 460xi faceplate	4.5" H x 4.6" W x 0.1" D (2 gang) (11.4 cm H x 11.7 cm W x 0.3 cm D)
RGB 460xi MK faceplate	3.4" H x 5.7" W x 0.1" D (8.6 cm H x 14.5 cm W x 0.3 cm D)
RGB 460xi FSR faceplate	4.5" H x 3.6" W x 0.1" D (11.4 cm H x 9.1 cm W x 0.3 cm D)
RGB 464xi/468 Mxi faceplate	4.5" H x 6.4" W x 0.1" D (3 gang) (11.4 cm H x 16.3 cm W x 0.3 cm D)

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RGB 468xi /RGB 460xi Dual faceplate
4.5″ H x 8.3″ W x 0.1" D (4 gang)
(11.4 cm H x 21.2 cm W x 0.3 cm D)

RGB 460 EC faceplates ..... 3.2" H x 4.4" W x 0.1" D
(8.0 cm H x 11.2 cm W x 0.3 cm D)

RGB 468 EC faceplates ..... 3.2" H x 7.7" W x 0.1" D
(8.0 cm H x 19.5 cm W x 0.3 cm D)

RGB 460xi SC-AFM2 faceplate
2.9" H x 3.5" W x 0.1″ D
(7.4 cm H x 8.9 cm W x 0.3 cm D)

RGB 460xi SC-AFM4 faceplate
2.9" H x 5.8" W x 0.1″ D
(7.4 cm H x 14.7 cm W x 0.3 cm D)

RGB 468xi AKM UK faceplate
3.0" H x 8.1" W x 0.59" D
(7.6 cm H x 20.6 cm W x 1.5 cm D)

RGB 464xi SC-AFM6, RGB 468xi SC-AFM6 faceplate
2.9" H x 8.9" W x 0.1" D
(7.4 cm H x 22.6 cm W x 0.3 cm D)

Interface enclosure for all models (RGB 460xi Dual includes two enclosures)
2.7" H x 3.3" W x 1.0" D
(6.9 cm H x 8.4 cm W x 2.8 cm D)
(Depth excludes front panel connectors and controls.)

Enclosure dimensions — SC-AFM8 adapter plate
4.4" H x 9.4" W x 0.1" D
(11.2 cm H x 23.9 cm W x 0.3 cm D)

Product weight

RGB 460xi SC-AFM2	0.5 lbs (0.3 kg)
RGB 460xi SC-AFM4, RGB 464xi SC-AFM6, RGB 468xi SC-AFM6, RGB 468xi AKM UK	0.8 lbs (0.4 kg)
SC-AFM8	0.6 lbs (0.3 kg)
RGB 460xi, MK and FSR	0.5 lbs (0.2 kg)
RGB 464xi, RGB 468xi, RGB 468 Mxi	0.7 lbs (0.3 kg)
EC models	0.7 lbs (0.3 kg)
RGB 460xi Dual	1.0 lbs (0.5 kg)
Shipping weight	AKM UK: 1.8 lbs (0.8 kg); others: 3 lbs (1.4 kg)
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

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Ordering Information

RGB 460xi[1, 2]	**Part numbers**
Interface	60-373-01 (gray), -02 (black), -03 (white)
2-gang mud ring kit	70-086-01 (gray), -11 (black), -21 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 460xi Dual[1, 2]	**Part numbers**
Interface	60-373-11 (gray), -12 (black), -13 (white)
4-gang mud ring kit	70-086-03 (gray), -13 (black), -23 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 460xi EC[1, 2]	**Part numbers**
Interface	60-373-10 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 464xi[1, 2]	**Part numbers**
Interface	60-449-01 (gray), -02 (black), -03 (white)
3-gang mud ring kit	70-086-02 (gray), -12 (black), -22 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 468xi[1, 2]	**Part numbers**
Interface	60-375-01 (gray), -02 (black), -03 (white)
4-gang mud ring kit	70-086-03 (gray), -13 (black), -23 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 468 Mxi[1, 2]	**Part numbers**
Interface	60-591-02 (black), -03 (white)
3-gang mud ring kit	70-086 -13 (black), -23 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 468xi EC[1, 2]	**Part numbers**
Interface	60-375-10 (white)
Power supply kit	70-159-01 (12VDC, 0.42A external)

RGB 468xi AKM UK[1]	**Part numbers**
Interface	60-626-01
Power supply	70-055-01 (12VDC, 1A, external)
Blank AAP, single	70-090-01
Blank AAP, double	70-090-02
Installation guide	68-904-01

[1]This manual (#68-542-01) ships with all RGB 460xi Series interface models.

[2]Depending on mounting location, one of the following installation guides ships with the interface: *RGB 460 MK Installation Guide* (#68-636-02), *RGB 400xi Series Wall Box Installation Guide* (#68-636-03), *RGB 460/470 Steel City Box Installation Guide* (#68-636-04), or *RGB 460xi/472xi FSR Installation Guide* (#68-636-05).

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Accessories

Wall/Junction boxes	Part number
2-gang J-box, 2.5″ deep	980083
3-gang J-box, 2.5″ deep	980084
4-gang J-box, 2.5″ deep	980097

Audio connector	Part number
3.5 mm stereo plug	10-306-01

Cables

Male-to-male VGA cables	Part number
VGA M6′ MHR	26-238-01
VGA M3′ MHRA (with audio)	26-490-01
VGA M6′ MHRA (with audio)	26-490-02
VGA M12′ MHRA (with audio)	26-490-03

Male-to-male 90° VGA cables	Part number
VGAM 90 MHRA 6′ (with audio)	26-510-02

Laptop breakout cables	Part number
Mac 15-pin HD F adapter cable kit w/audio	70-156-01
13W3 15-pin HD F adapter cable kit w/audio	70-157-01

High-resolution cables	Part number
BNC-5-3′HR	26-260-15
BNC-5-6′HR	26-260-01
BNC-5-12′HR	26-260-02
BNC-5-25′HR	26-260-03
BNC-5-50′HR	26-260-04
BNC-5-75′HR	26-260-16
BNC-5-100′HR	26-260-05
BNC-5-3′HRP (plenum)	26-378-01
BNC-5-6′HRP (plenum)	26-378-02
BNC-5-12′HRP (plenum)	26-378-03
BNC-5-25′HRP (plenum)	26-378-04
BNC-5-50′HRP (plenum)	26-378-05
BNC-5-75′HRP (plenum)	26-378-06
BNC-5-100′HRP (plenum)	26-378-07
Bulk installation cable (14-conductor, non-plenum), 500′ HR	22-120-02

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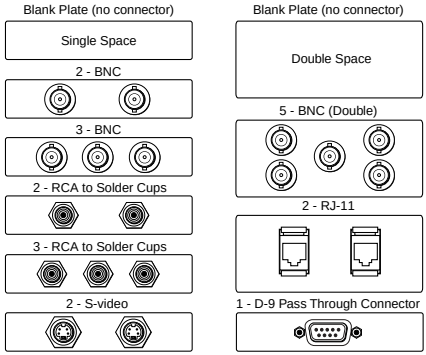
AAP/MAAP Availability

A variety of AAPs/MAAPs for pass-through connections may be ordered for the RGB 468xi and RGB 468 Mxi interfaces.

The RGB 468xi can accommodate up to 4 single-space AAPs (up to 3 with the RGB 468xi AKM UK), and the RGB 468 Mxi can accommodate up to 4 single-space MAAPs.

Both single- and double-space AAPs/MAAPs and AAP/MAAP blanks are available. Refer to the current Extron catalog for a complete listing.



Sample architectural adapter plates

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FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Daisan DMJ Bldg. 6F,
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Chiyoda-ku, Tokyo 102-0074
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This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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